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BOOK REVIEW

Annotated Keys to the Genera of Nearctic Chalcidoidea (Hymenoptera). Gary A. P. Gibson, John T. Huber and James B. Woolley (Editors.). NRC Research Press, Ottawa, 1997. xi+794 pp. Price: Canada CAN$64.95, other countries the equivalent of US$64.95 (hardcover). ISBN 066016669-0.

It has been said that it is dangerous to study the Parasitic Hymenoptera, for those who do are inclined to become alcoholics or end up in mental institutions. Notions of such despair undoubtedly stem from the daunting task that confronts those who venture to unravel the identity of this vast and taxonomically complex assemblage of enigmatic wasps.

The superfamily Chalcidoidea alone comprises close to 19,000 valid species in 2,000 genera, with estimates of the actual number of species ranging from between 60,000 to 100,000 world wide. Compounding the difficulties in coming to grips with the identity of this bewildering array of mostly poorly known taxa is the plethora of scattered and often inaccessible descriptive literature spanning some 200 years of taxonomic endeavour on the group. The task is made even more arduous by a shortage of essential identification tools such as modern catalogues, revisions, keys and adequately documented reference collections. In Britain, arguably the cradle of Chalcidology, there are for instance no modern identification keys for more than half of the 5,000 or so species of Hymenoptera (Weeks et al. 1997, Bull. Ent. Res. 87: 203), many of which belong to chalcidoid groups.

What is clearly needed, is to take stock of what is known, collate and synthesize the vast pool of scattered knowledge, much of which is buried in a few inquiring minds, and make it readily accessible in such a way that it is both palatable and of practical value to all. Indeed, this is not only imperative in giving credence to the ideals of the Convention on Biological Diversity, but also in proving the worth of insect systematists in a world of changing attitudes to science.

The 17 authors of Annotated Keys to the Genera of Nearctic Chalcidoidea receive full credit for having done exactly that. In harnessing their collective skills to the full they have produced an outstanding synopsis of the 19 families and 706 chalcidoid genera known to occur in the region. But the true value of this book lies far beyond that of a manual merely for identifying specimens. It its also an impressive reference work, crammed with invaluable nomenclatural, bibliographical and host information on the Nearctic chalcidoid fauna.

The book comprises 22 chapters. The introduction, which contains interesting background information on the history of Chalcidology in North America, numbers of taxa and the rate at which genera have been described from the region through the years, is followed by a chapter on morphology. Morphological terms pertaining to the keys and various family diagnoses are conveniently highlighted in bold, clearly explained and depicted in a series of uncluttered line drawings and good quality scanning electron micrographs. For quick reference, terms are listed alphabetically in a separate appendix with their abbreviations and reference to figures. A second appendix cross-references the abbreviations with terms. The disadvantage of having this information separate, and not in figure legends below the plates, is that some paging is required to determine the meanings of the abbreviations depicted in the illustrations.

Chapter three provides, besides a key to

families, an overview of the Chalcidoidea and covers topics such as recognition of the group, mode of parasitism (feeding types), host ranges and relationships, behaviour, collecting methods and voucher specimens. Written in clear language, this is essential reading matter which should appeal in particular to the non-specialist seeking general background information on the superfamily at a glance.

The family key is primarily a derived combination of those found in A Handbook of the families of Nearctic Chalcidoidea and Hymenoptera of the World. In recognizing 19 families, the authors have opted for the traditional system of classifying chalcidoids at this level. Considering the intended purpose of the book and the instability of the higher classification of these wasps, in which anything from nine to 24 families have been recognized, this is a sensible choice.

Preceding the key is a flow chart which gives a pleasing visual impression of how the 19 families are keyed out in the 40 couplets. The key itself is visually less pleasing. Placing the figures associated with each alternate of a couplet directly above it allows for easy comparison between figures and text, but often results in insufficient space for both alternates on the same page. Consequently, many pages are left with unsightly blank spaces, while the alternates of some couplets appear on different pages, making comparisons somewhat cumbersome. More important though, is the fact that the key works well. Evidently, much careful thought has gone into making it both accurate and workable for the novice and specialist alike. Chosen for diagnostic reliability rather than convenience, the characters are not necessarily "easy" to use, but being appropriately and clearly illustrated there should be no problem in keying specimens out.

The bulk of the remaining text is devoted to the family treatments. Each of the 19 chapters reviews one family and includes, apart from a generic key, sections on its recognition, systematics, biology, fauna and literature. For larger families a useful index to genera based on couplet numbers is also included. These topics are all well covered, serving as a concise and informative introduction to the 19 families as represented in the Nearctic region.

In essence, this book is all about generic keys to Nearctic chalcidoids, and its real value will ultimately be judged by how well these keys perform. So I decided to put some of them to the test, selecting specimens not only from the Nearctic region, but also from further afield. The results were excellent, bearing testimony to the skillful and competent way in which these keys have been constructed. The contents of the couplets are unambiguous and the taxonomic language easy to comprehend. I was pleased to see that the authors have, in all but one of the tested keys, managed to avoid using the handy but dreadful "either/or" method of separating taxa. All of this adds much to the relative ease with which the user is guided through the keys, even in the case of genera which are difficult to define. Although these keys have been designed specifically for the Nearctic region, they will, if used with the necessary insight and care, also serve as a very useful tool in the study of extra-limital forms, as was evident from the large selection of Afrotropical specimens which keyed out perfectly well. Greatly enhancing the value of these keys are brief annotations to each genus comprising references to existing species keys, estimated number of species, known distribution and host range in the region.

The use of the keys is facilitated by 1,880 line drawings and scanning electron micrographs which, despite the inputs from a variety of illustrators, are of a consistently high aesthetic and technical standard. With the intended readership of the book in mind, a few more eye-catching habitus drawings, which are completely lacking for some families, would have added a special touch.

The book concludes with four very useful indices. The first one comprises about 130 generic and subgeneric chalcidoid names (with their nomenclatural fate) which have become invalid since publication of the most recent (1979) edition of Catalog of Hymenoptera in America North of Mexico. Following this index are separate lists of plant and animal hosts, and supraspecific chalcidoid names.

In summary, I applaud the contents of this book, hence the lack of any serious criticism. Naturally, this is not the last word on the supraspecific identity of Nearctic chalcidoids, for our knowledge and understanding of the fauna is far from complete. But the authors have succeeded admirably in synthesizing what is presently known while providing an excellent framework for further revisionary work on the group. I recommend this book as an indispensable reference and identification tool for anyone, specialists and generalists alike, involved in the study of parasitic wasps.

Gerhard Prinsloo, *Biosystematics Division ARC–Plant Protection Research Institute Pretoria, South Africa.*